

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-019449**Date Inspected:** 10-Jan-2011**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A). Field Splice W8/W9
- B). Lifting Lug Holes
- C). Pipe Supports
- D). QC Ultrasonic Testing
- E). Miscellaneous Tasks

**A). Field Splice W8/W9**

The QAI observed the continued excavation and repair welding of the unacceptable discontinuities on the deck plate field splice identified as WN: 8W-9W-A, repair cycle # R1. The rejectable discontinuities were discovered during the Ultrasonic Testing (UT) performed by the QC technician, Patrick Swain. The discontinuities appeared to travel in the longitudinal direction of the weld axis. The excavations of the rejected areas was performed by the welder Wai Kitlai ID-2953 utilizing a high cycle grinder to remove the defects and a rotary file to bring the excavated area into compliance with the Weld Procedure Specification (WPS) ABF-WPS-D15-1001 Repair, Rev. 0. At the conclusion of the excavations the QAI observed the QC inspector, Mr. Swain, performed a visual inspection and a Magnetic Particle Test (MPT) of the excavated areas and no rejectable indications were noted. At the conclusion of the VT and MPT, the welder commenced the welding of the repair which was identified with the following Y coordinates; Segment A4,Y=860 mm, Y=2730 mm and Y=3050. The welding was performed by Mr.

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Kitlai utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS which was also utilized by the QC inspector, Gary Erhsam, to monitor the welding and to verify the DC welding parameters. The QC inspector verified the DC welding parameters as 128 amps and the minimum preheat temperature of 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welding was performed in the flat (1G) position utilizing a 3.2 mm low hydrogen electrode. The welding of the repairs were not completed during the scheduled shift. The QAI also verified the dimensions of the excavations and were noted and recorded as follows; Segment A4, Y=860 mm, L=250 mm, d=14 mm , Y=2730 mm, L=130 mm, d=13 mm and Y=3050 mm, L=130 and d=13.5.

The QAI observed the Shielded Metal Arc Welding (SMAW) process of the edge plate field splice identified as Weld No. (WN): 8W-9W-B1. The welding was performed by Hua Qiang Hwang ID-2930 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1110A, Rev. 1. The WPS was also used by the Quality Control (QC) Inspector Gary Erhsam as a reference to verify the Direct Current Electrode Positive (DCEP) welding parameters and to monitor the Complete Joint Penetration (CJP) welding. Later in the shift, the QAI also observed the QC inspector verifying the welding parameters and were noted as 131 amps. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with contract documents. The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane with the groove approximately vertical.

The QAI also observed the Shielded Metal Arc Welding (SMAW) process of the edge plate field splice identified as Weld No. (WN): 8W-9W-F1. The welding was performed by Mick Chan ID-9265 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1110A, Rev. 1. The WPS was also used by the Quality Control (QC) Inspector Gary Erhsam as a reference to verify the Direct Current Electrode Positive (DCEP) welding parameters and to monitor the Complete Joint Penetration (CJP) welding. Later in the shift, the QAI also observed the QC inspector verifying the welding parameters and were noted as 127 amps. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with contract documents. The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane with the groove approximately vertical.

### B). Lifting Lug Hole

The QAI observed the field fit-up of the lifting lug hole insert plates to the "A" deck of the Orthotropic Box Girders identified as W2, W3 and E5. The work was performed on the weld joints identified as WN: 2W-PP17-W4, Weld No's. 2 and 4, 3W-PP22-W3, Weld No. 3 and 5E-PP35-W1, Weld No. 1. The assembly fit-up of these items was performed accordingly by Mike Jiminez, Darcel Jackson and Salvador Sandoval. The plates were held securely in place by heavy duty magnets during the welding of the root pass utilizing a low-hydrogen 3.2 mm electrodes identified as E7018-H4R as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1070A, Rev. 1. The WPS was also used by the QC inspector Mike Johnson as a reference to verify the DCEP welding parameters, monitor the welding and to verify minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

### C). Pipe Supports

The QAI observe the on going installation, field welding of the pipe supports along the W5 grid line located on the

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"A" deck of the OBG's identified as W5, W8 and W9. The QC inspection was performed by Mike Johnson utilizing the Welding Procedure Specification (WPS) identified as Fillet Murex to monitor the tack welding and to verify the welding parameters. The welding parameters were observed and recorded as 90 and 94 amps accordingly utilizing 2.4 mm electrodes with the welding performed in the 2F and 3F position. The tack welding was performed by Rick Kiikvee ID-5319 and David Garcia ID-8789.

### D). QC Ultrasonic Testing

Later in the shift, the QAI also observed the Ultrasonic Testing (UT) of the R1 repairs on the Deck Access Hole (DAH) identified as WN: 1W-PP10.5-W5-SW. The testing was performed by the QC technician John Pagliero utilizing a G.E./Krautkramer USM 35X. The examination of the repairs was conducted utilizing UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 and the applicable contract documents. The QC technician performed the required longitudinal wave technique, utilizing a 25.4 mm diameter transducer, to perform the examination for base metal soundness and the shear wave technique for the examination of weld soundness which was performed utilizing a 16 mm x 19 mm rectangular transducer. The testing was not completed during this shift.

### E). Miscellaneous Task

This QAI also performed a review and update of the project progress utilizing QA field reports and NDT reports. The updated project information was documented into the various QA tracking logs.

### QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs on page 4 of this report illustrate some of the work observed during this scheduled shift.

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### Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

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**Inspected By:** Reyes, Danny

Quality Assurance Inspector

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**Reviewed By:** Levell, Bill

QA Reviewer